

### III. REMARKS REGARDING THE PRESENT AMENDMENT

Claim 7 has been amended to expressly require that the thermoplastic joining surfaces of the disassembled toner cartridge are along the same thermoplastic joining surfaces of the original toner cartridge that was disassembled. It is believed that this limitation is inherent in claim 7 prior to the amendment, and thus the amendment is to make express that which was believed to be inherent and/or implied in the prior claim 7.

Claims 16 and 18 have been amended by deleting the claim language related to “gimbal” for the reasons that this language was not needed for patentability and that it appeared these claims had been rejected under 35 U.S.C. § 112, ¶2 as indefinite regarding the word “gimbal”. Claims 16 and 18 have also been amended to expressly refer to “line segments” and to expressly refer to the formation of “disassembled” cartridge segments as the result of the claimed process.

New claims 19-21 have been presented in reply to the rejection apparently made to claim 6 under 35 U.S.C. § 112, ¶2, as indefinite regarding the word “gimbal”. While Applicants believe that use of the word “gimbal” is proper, Applicants also appreciate the Examiner’s acknowledgment that this term also means “clamp”, “holder” and “rotation device”. Thus, new claim 19 is identical to claim 6 except that the word “gimbal” has been replaced with the word “clamp” in each instance. Similarly, new claim 20 is identical to claim 6 except that the word “gimbal” has been replaced with the word “holder” in each instance. Finally, new claim 21 is identical to claim 6 except that the word “gimbal” has been replaced with the words “rotation device” in each instance.

New claims 22 and 23 have been presented in reply to the rejections made to claims 15 and 17 apparently under 35 U.S.C. § 112, ¶2, as indefinite regarding the word “gimbal”. While Applicants believe that use of the word “gimbal” is proper in claim 15 and 17, Applicants also appreciate the Examiner’s acknowledgement that this term also means “clamp”, “holder” and “rotation device”. Also, while Applicants believe that a series of new claims could be submitted, with each series differing only in the substitution of the words “clamp”, “holder” and “rotation device” for “gimbal”, Applicants presently choose to retain claims 15 and 17 using the word

“gimbal” and also submit new claims 22 and 23, which claims are identical to claims 15 and 17, respectively, except for substitution of the words “rotation device” for “gimbal” in each instance. Thus, new claim 22 is identical to claim 15 except that the word “gimbal” has been replaced with the words “rotation device” in each instance. Similarly, new claim 23 is identical to claim 17 except that the word “gimbal” has been replaced with the words “rotation device” in each instance.

No new matter is added by these amendments. In the event the Examiner is of the view that the terms “clamp”, “holder” and “rotation device” should be expressly stated in the specification as synonyms for the term “gimbal”, authorization is hereby granted for an Examiner’s Amendment to that effect.

#### **IV. REPLY TO REJECTIONS MADE UNDER 35 U.S.C. §101**

##### **A. The Office Action Fails to Establish a Prima Facie Case of Non-Statutory Subject Matter**

Claims 6 and 15-18 have been rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter, allegedly because “computer programming and computer instructions” are non-statutory. The Office Action alleges, without citation to authority and without reasoning that applies any authority to these claims that “Applicant has used computer programming and computer instructions; these are non-statutory.”

In reply Applicants emphasize that because the Office Action has no citation to any authority, such as the MPEP or any case holding from the United States Court of Appeals for the Federal Circuit or from the United States Supreme Court, and has no reasoning that even purports to apply some authority to claims 6 and 15-18, the Office Action is fatally defective and should be withdrawn for that reason alone. In addition, the Office Action identifies no specific claim language that allegedly renders the claims to be non-statutory, and should be withdrawn for this reason alone. For all of these reasons alone the rejection should be withdrawn.

**B. Claims 6 and 15-18 Are Statutory Subject Matter Under Controlling Authority**

With reference to the Supreme Court's opinion in *Diamond v. Diehr*, 450 U.S. 175 (1981) (providing that a computer-implemented invention that has a practical application is statutory subject matter), the Federal Circuit's seminal opinion in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) (providing that a claim to a computer-implemented invention that has a "useful, concrete and tangible result" is statutory subject matter) and the Patent Office's Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (the "Guidelines") it will be shown that claims 6 and 15-18 are statutory.

First, it is noted that none of claims 6 or 15-18 is directed to any of the judicially created exceptions to statutory subject matter, i.e., none of these claims is directed to a law of nature, to any natural phenomena or to any abstract idea. Rather, all of the claims expressly include computer-implemented limitations and therefore are directed to machine-implemented subject matter that is not a law of nature, not any natural phenomena and not any abstract idea. See, e.g.:

Claim 6 - "providing a computer processor operationally connected with said gimbal, said laser and said moveably adjustable light path:

Claim 15 - "providing a computer implemented laser cutting system including a computer, a laser adapted to project a laser beam, a gimbal positioned in an initial gimbal position and adapted to move in one dimension, and a moveably adjustable light path";

Claim 16 - "disassembling a laser printer toner cartridge with a computer implemented laser cutting system";

Claim 17 - "providing a computer implemented laser cutting system including a computer, a laser adapted to project a laser beam, a gimbal positioned in an initial gimbal position, and a movably adjustable light path"; and,

Claim 18 - "method of disassembling a thermoplastic laser printer toner cartridge with a computer implemented laser cutting system."

Thus, as shown above there is no basis under controlling authority for concluding that any of claims 6 and 15-18 is directed to non-statutory subject matter.

Second, even assuming that any of these claims was directed to one or more of the above judicially created exceptions, each and every one of those claims unquestionably meet and exceed the tests for eligible statutory subject matter set forth in the above authority. All claims are directed to making a disassembled toner cartridge in a way that will result in a disassembled cartridge ready for re-assembly back to a cartridge that is in OEM specification, and thus all of claims 6 and 15-18 have practical application. Because the disassembled toner cartridges made in accordance with the presently claimed process steps facilitate re-manufacture of toner cartridges meeting OEM specifications, a result that heretofore was not possible through use of the prior art sawing or blunt cutting methods for disassembly of the original cartridges, the presently claimed processing steps and presently claimed resulting disassembled cartridges without doubt yield useful, concrete and tangible results.

Furthermore, with reference to the Guidelines and the MPEP, Applicant replies that:

1. All of these claims are classic “process” claims expressly permitted under 35 U.S.C. § 101, e.g., a process for disassembling a toner cartridge. The fact that one aspect of the process uses a computer-implemented step does not remove the claim from being statutory.
2. The language used in the claims is NOT descriptive; rather the language requires the affirmative step of providing a computer processor that is operationally connected to a laser and then also requiring specific additional computer-implemented steps for precisely cutting the cartridge along the joining surfaces of the original cartridge.
3. Assuming, arguendo, that the terms in the rejected claims that contain the word “computer” are “descriptive”, the claims nevertheless are statutory because the computer and related technology permit the disassembled cartridge to be made from an assembled or original toner cartridge.

For all of the above reasons, it is believed that the claims are statutory and that the rejection should be withdrawn.

**C. Allegations in the Office Action Regarding the Term “Gimbal” Fail to Establish That the Claims Are Not Statutory Subject Matter**

Under the heading for Section 101 rejections the Office Action also rejects claims 6 and 15-18 on the ground that the term “gimbal” is used to mean “clamp” or “holder”, that the accepted meaning is “rotation device”, and that apparently because the specification does not provide an express definition for the word “gimbal” the claims are indefinite and therefore are directed to non-statutory subject matter. It appears that this language in the Office Action was intended to have been a rejection made under 35 U.S.C. § 112, ¶ 2, rather than under 35 U.S.C. § 101. With that understanding Applicants will reply to the substance of this rejection in section V below, and as if the rejection had been made under 35 U.S.C. § 112, ¶ 2.

**V. REPLY TO REJECTIONS APPARENTLY INTENDED TO HAVE BEEN MADE UNDER 35 U.S.C. §112, ¶ 2**

As discussed in the immediately preceding section, claims 6 and 15-18 were rejected on the ground that the term “gimbal” is used to mean “clamp” or “holder”, that the accepted meaning is “rotation device” and that apparently because the specification does not provide an express definition for the word “gimbal” the claims are indefinite and therefore are directed to non-statutory subject matter. It appears that a rejection was intended to have been made under 35 U.S.C. § 112, ¶ 2, rather than under 35 U.S.C. § 101. With that understanding Applicant hereby replies to the substance of this rejection, and as if it had been made under 35 U.S.C. § 112, ¶ 2.

As defined in the Merriam-Webster’s Collegiate Dictionary, 11<sup>th</sup> Ed, 2003, the term “gimbal” means “a device that permits a body to incline freely in any direction or suspends it so that it will remain level when its support is tipped.” In Figures 2, 3 and 5 such a device is illustrated, and referred to as a “work piece gimbal”. This device is also described in the

specification, at pages 6-9 as gimbal 40. For example, in the paragraph spanning pages 7-8, part of the inventive process includes a determination on whether a change of position of the device (gimbal) is required to enable the selected interface line to be traced by the laser beam, and if so, instructions are input to the device (gimbal) motor to move the device (gimbal) to a selected new position.

Thus, the term “device” in the dictionary definition corresponds to the term “gimbal” in the patent application, and the term “body” in the dictionary definition corresponds to the term “work piece” and to the term “container” in the patent application as filed. As also described in the application this container is a three-dimensional object, having thermoplastic joining surfaces, and the gimbal in combination with the associated motors and optical system is capable of focusing the laser beam to cut through the container at the joining surfaces in any direction in which such surfaces might lay on the container. As such it is believed that the structure described and illustrated in the application does permit the work piece/container to incline freely in any direction, and that the term gimbal is used in a manner that would be understood by a person of ordinary skill in this field. For this reason it is believed that the term gimbal as used in claims 6 and 15-18 is not indefinite, and that the rejection should be withdrawn.

Additionally, Applicant appreciates the acknowledgement in the Office Action that the term gimbal as used in the application also means clamp, holder and rotation device. In light of that acknowledgement Applicants have added new claims 19-23 to particularly point out what Applicants claim as their invention. Claim 19 is identical to claim 6, except that the term “clamp” replaces the term “gimbal” in claim 6. Claim 20 is identical to claim 6, except that the term “holder” replaces the term “gimbal” in claim 6. Claim 21 is identical to claim 6, except that the term “rotation device” replaces the term “gimbal” in claim 6. Claim 22 is identical to claim 15, except that the term “rotation device” replaces the term “gimbal” in claim 15. Claim 23 is identical to claim 17, except that the term “rotation device” replaces the term “gimbal” in claim 17.

It is believed that based on the above dictionary definition and the meaning acknowledged by the Examiner, no amendment to the specification is needed, the interpreted terms “clamp”, “holder” and “rotation device” being implied. However, in the event the Examiner is of the view that amendment to the specification would clarify the term, the Examiner is hereby authorized to make such amendment to the specification by Examiner’s Amendment.

For all of the above reasons it is believed that the rejection(s) made to claims 6 and 15-18 related to meaning of the term “gimbal” be withdrawn.

**VI. REPLY TO REJECTION OF CLAIMS 7-11 AND 14 MADE UNDER 35 USC §102(b) or §103(a) OVER THE ARAKI ‘010 PATENT**

Claims 7-11 and 14 have been rejected under 35 USC § 102(b) or 103(a) as anticipated by or obvious over US Patent 6,223,010 to Araki (“the ‘010 patent” or “Araki”). The basis for the rejection is that these claims are to a product, that product is a disassembled cartridge, that Araki discloses a disassembled cartridge, that the process limitations in claims 7-11 and 14 are to be given no weight, and that there is no difference between the structural limitations of the claimed disassembled cartridge and the Araki disassembled cartridge. The Office Action acknowledges that the claimed disassembled cartridges are made by processes that are different from those in Araki, but has shifted the burden of proof to Applicants and now requires that Applicants provide only a showing that the resulting claimed disassembled cartridges have “inherently different characteristics” than the characteristics in the prior art Araki disassembled cartridges.

**A. The Claimed Disassembled Cartridges Have “Inherently Different Characteristics” Than the Araki ‘010 Disassembled Cartridges**

Independent claim 7 and its dependent claims 8-11 all require:

a disassembled toner cartridge . . . suitable to be remanufactured or reassembled . . . comprising . . . sections with thermoplastic joining surfaces adapted to be sealingly joined along an interface between said joining surfaces and along a three dimensional, serpentine path to achieve alignment and orientation necessary for proper operation

Thus, the claimed disassembled cartridges have surfaces that can be joined back together to achieve alignment and orientation for proper operation. No such characteristic exists in the disassembled cartridges of Araki. Applicants rely on three express admissions made by Araki to show that his disassembled cartridges are inherently different.

First, Araki '010 describes 6 embodiments of processes for disassembling a cartridge and in regard to all six embodiments admits that due to the cutting process employed that the cartridges are so "cut or destroyed" that they "are rather suited to be melted and recycled, as a resin material" rather than to be remanufactured or reassembled as frames as required by the claims. See, e.g., [9:20-25; 9:48-53].

Second, the Araki disassemble frames are not complete disassembled frames or cartridges; they are incomplete. This is because, as Araki admits, his process actually covers part of the frame with a material layer 15 that is not cut by the laser. This is done in order to easily remove the toner feeding member and feed member driving gear so that they can be recycled as is. Specifically, a metal foil is used as the material layer. Thus, in Araki the disassembled cartridges are not even complete disassembled cartridges! As such they can't be remanufactured or reassembled as is. This incontrovertible fact is one of the reasons for Araki's prior admission that his disassembled cartridges must be melted and recycled as a resin material rather than used as disassembled cartridge frames to be reassembled. See, e.g., [10:21-25; 10:58-60].

Third, in order for the claimed disassembled cartridge to be remanufactured or reassembled to achieve alignment and orientation for proper operation, the cutting must be along the joining surface interfaces of the original cartridge and thus the disassembled cartridges must have their joining surfaces be the exposed surfaces for the simple reason that those are the locations where the cuts take place. In regard to the Araki disassembled cartridges, such exposed surfaces are not possible. As shown above, Araki admits that his process does not even cut the assembled cartridges in those locations where the metal foil is placed. Because no cutting takes place under the foil it is necessarily true that there could be not cutting along joining surfaces in those locations in the Araki process and disassembled cartridges, and thus the disassembled



Araki cartridges could not possibly have exposed surfaces along cuts at the joining surfaces of the original cartridges. Finally, there is no disclosure in Araki that his process makes cuts along joining surfaces of the original cartridges, and he indicates that the cut can be made along any predetermined cut position so as to pass through the toner frame within the width  $w$  of the metal foil cover 15. See, e.g., [10:40-47].

Thus, for all of the above reasons the claimed disassembled toner cartridges have inherently different characteristics than the disassembled Araki cartridges, and the rejection should be withdrawn for this reason alone.

Claim 14 has structural limitations like those of claim 7 and a structural limitation similar to that of claim 7, but not expressly found in Araki. Thus claim 14 expressly requires that the disassembled cartridge have surfaces formed at the interfacing thermoplastic joining surfaces of the toner cartridge from which it was made.

Applicants rely on the showings made above in regard to claim 7-11 as if fully set forth herein to apply to claim 14. In addition, with respect to the limitation of claim 14 that requires the claimed disassembled toner cartridge to have surfaces formed at the interfacing thermoplastic joining surfaces of the toner cartridge from which it was made, Araki's admissions, discussed above, conclusively show that Araki's disassembled cartridges are inherently different than the claimed disassembled cartridge. Because Araki does not disassemble a cartridge by cutting along all of its joining surfaces, once cut, the disassembled Araki toner cartridge necessarily does not have surfaces formed at the interfacing thermoplastic joining surfaces of the toner cartridge from which it was made. Thus, the claimed product has inherently different characteristics.

**B. Additional Evidence To Show That The Different Methods of Manufacture Produce Articles Having Inherently Different Characteristics**

In regard to claims 7-11 and 14, Applicant further relies on the Declaration of Sagie Shanun, submitted under 37 CFR § 1.132 ("Shanun Decl.") to show that the product made by the claimed process is inherently different from the product made by the Araki process. See, Shanun Decl., at ¶¶ 17, 23-24. In the Araki process, high accuracy of the cut is not required See, e.g., [10:35-60; 11:55-58] because the disassembled cartridges are pulverized and melted into resin,

but high accuracy of the cut is required in the claimed process so that the disassembled cartridges and can be reassemble along their original joining lines and to meet OEM specifications.

Specifically, as stated in the declaration, one of the objects of remanufactured cartridges made from cartridge sections made with the present disassembly process is to have the remanufactured cartridge meet OEM specifications. Second, by use of the present, computer controlled cutting, exact, reproducible cuts are made, and variations and labor costs due to individual human cutting operations are avoided. Third, the computer-implemented laser cuts of the present process are not only very precise, but they are also very esthetically pleasing to the viewer. This is important in the cartridge repair and remanufacturing industry because it contributes to the credibility associated with remanufactured cartridges that use this process, in comparison to relatively rough, unattractive looking remanufactured cartridges made with other disassembly techniques. In other words, not only do remanufactured cartridges made from the claimed disassembled cartridge sections perform like OEM cartridges, they also look like OEM cartridges. The cuts made to the original cartridge with this process yield very good appearance to the resulting disassembled cartridge, an appearing that looks professional and provides for a reassembled cartridge that is sellable to a customer who is accustomed to OEM quality products.

### **C. The Law Re Product By Process Claims is Somewhat Unclear**

Applicants note that the Office Action has cited several cases in regard to the law related to interpretation of product-by-process claims, and notes that those citations are neither complete nor necessarily entirely correct in regard to whether process limitations in a product-by-process claim are never to be given any weight. There appears to a conflict of authority in this regard. See, *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F3d. 1312 (Fed. Cir. 2006); *SmithKline Beecham Corp. v. Apotex Corp.*, 453 F3d. 1346, (Fed. Cir. 2006); *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, (Fed. Cir. 1999); *Atlantic Thermoplastics Co. v. Faytex Corp.*, 970 F.2d 834, (Fed. Cir. 1992). However, for the purpose of this reply Applicants need not delve into this controversy, because even under the standard applied by the examiner, i.e., that a claimed product that is different from the cited prior art product must be shown, the

presently rejected claims are patentable. See the above showing of (i) structural limitations in the claims that distinguish over the structures in Araki, and of (ii) the different methods of cartridge disassembly (Araki's method as compared to Applicant's method) produce articles having inherently different characteristics.

For all of the above reasons it is requested that the rejection to claims 7-11 and 14 be withdrawn.

**VII. REPLY TO REJECTION OF CLAIMS 7-11 AND 14 MADE UNDER 35 USC §102(b) or §103(a) OVER THE BAILEY '794 PATENT**

Claims 7-11 and 14 have been rejected under 35 USC § 102(b) or 103(a) as anticipated by or obvious over US Patent 5,676,794 to Bailey ("the '794 patent" or "Bailey"). The basis for the rejection is that these claims are to a product, that product is a disassembled cartridge, that Bailey discloses a disassembled cartridge, that the process limitations in claims 7-11 and 14 are to be given no weight, and that there is no difference between the structural limitations of the claimed disassembled cartridge and the Bailey disassembled cartridge.

**A. The Claimed Disassembled Cartridges Have Inherently Different Characteristics Than the Disassembled Cartridges Found In or Taught by Bailey '794**

Independent claim 7 and its dependent claims 8-11 all require the following structural limitation:

a disassembled toner cartridge . . . suitable to be remanufactured or reassembled . . . comprising . . . sections with thermoplastic joining surfaces adapted to be sealingly joined along an interface between said joining surfaces and along a three dimensional, serpentine path to achieve alignment and orientation necessary for proper operation

Thus the claimed disassembled cartridges have surfaces at the cut interface between joining surfaces of the original cartridge that can be joined back together to achieve alignment and orientation for proper operation. No such surfaces are found in the disassembled cartridges of Bailey; rather Bailey's disassembled cartridges don't even have such joining surfaces because those parts of the original cartridges have been removed by the blunt, table saw cutting blade

used in the Baley process. Baley disassembles cartridges with a blunt saw, along a single cutting line. Because the process used in Baley is simply a blunt, single line cutting with a table saw blade, the resulting products inherently cannot be the same. There is no serpentine path of cutting in the Baley process and thus there cannot be any corresponding serpentine path surfaces in the disassembled cartridge as required by the claims. See, e.g., [5:35-38], where Baley expressly limits the cutting path to “one-directional movement”. The blunt saw of Baley also necessarily leaves edges that are not smooth, in contrast to the joining surfaces of the presently claimed disassembled cartridges.

Baley has no serpentine path that is traced through three dimensions as is found in the cartridges from which the claim 7 cartridge sections are made and as claimed. Furthermore, the Baley method is limited to placing the cartridge on a table and then, with one or two circular saws, cutting through only two sides only of a toner cartridge. The toner cartridge shown in Baley is an old cartridge design, and is not even welded together at the two ends. Sealing at the two ends is provided by seals 77. See, Baley at [4: 23-32, and Figure 2].

Additionally, in Baley no electrical conductor or printed circuit board is shown passing through or very near the joining interfaces of the Baley cartridge. As explained in the Shanun Decl., at ¶¶ 18-19 the Baley process is directed to cutting toner cartridges that have linear joining surfaces; not cartridges that have joining surfaces extending in three dimensions, to which the presently claimed method are directed.

Claim 14 has structural limitations similar to that of claims 7-11, and also an express limitation not found in Baley. Thus claim 14 expressly requires that the disassembled cartridge have surfaces formed at the interfacing thermoplastic three dimensional joining surfaces of the toner cartridge from which it was made.

Applicants rely on the above showings made in response to the rejection of claims 7-11 as if set forth in full herein. Also, with respect to the claim limitation that the disassembled toner cartridge has surfaces formed at the interfacing thermoplastic joining surfaces of the toner cartridge from which it was made, Baley clearly fails to include such a feature, as discussed in

detail above. Because the process used in Baley fails to cut an assembled cartridge along three dimensional serpentine joining surfaces, once cut, the disassembled Baley toner cartridge necessarily does not have surfaces formed at the interfacing thermoplastic joining surfaces of the toner cartridge from which it was made. Thus, the claimed product has inherently different characteristics.

Thus, for these reasons the claimed product has inherently different characteristics than the disassembled cartridges of Baley, and it is requested that the rejection to claims 7-11 and 14 be withdrawn.

**B. The Different Methods of Manufacture Produce Articles Having Inherently Different Characteristics**

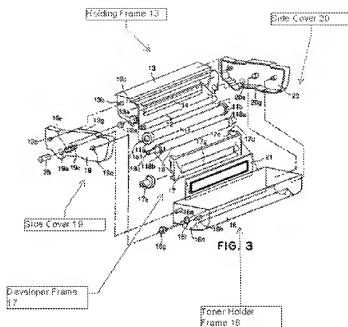
With respect to the differences between the resulting disassembled cartridge of the present serpentine path, laser cutting process and the one direction table sawing process of Baley, Applicant further relies on the Shanun Decl., ¶¶ 17-22, to show that the product made by the claimed process is inherently different from the product made by the Baley process. Specifically, as stated in the declaration, one of the objects of remanufactured cartridges made from cartridge sections made with the present disassembly process is to have the remanufactured cartridge meet OEM specifications. Second, by use of the present, computer controlled cutting, exact, reproducible cuts are made, and variations and labor costs due to individual human cutting operations are avoided. Third, the computer-implemented laser cuts of the present process are not only very precise, but they are also very esthetically pleasing to the viewer. This is important in the cartridge repair and remanufacturing industry because it contributes to the credibility associated with remanufactured cartridges that use this process, in comparison to relatively rough, unattractive looking remanufactured cartridges made with other disassembly techniques. In other words, not only do remanufactured cartridges made from disassembled sections by this process perform like OEM cartridges, they also look like OEM cartridges. The cuts made to the cartridge with this process have a very good appearance that looks professional and is sellable to a customer who is accustomed to OEM quality products.

For all of the above reasons it is believed that the rejection based on Baley should be withdrawn.

**VIII. REPLY TO REJECTION OF CLAIMS 7-11 AND 14 MADE UNDER 35 USC §102(b) or §103(a) OVER THE SEKINE '908 PATENT**

Claims 7-11 and 14 have been rejected under 35 USC § 102(b) or 103(a) as anticipated by or obvious over US Patent 6,788,908 to Sekine ("the '908 patent" or "Sekine"). The basis for the rejection is that these claims are to a product, that product is a disassembled cartridge, that Sekine discloses a disassembled cartridge, that the process limitations in claims 7-11 and 14 are to be given no weight, and that there is no difference between the structural limitations of the claimed disassembled cartridge and the Sekine.

Sekine '908 is newly cited in the last Office Action. Sekine disclosed five embodiments of processes for disassembly of a toner cartridge, with the first two methods (embodiments 1 and 2) pulverizing the cartridge frames and using the pulverized cartridge only as material for construction of entirely new structures. The last three Sekine methods (embodiments 3-5) include using the disassembled cartridge frame sections "as is" in remanufacturing a cartridge. All five methods are discussed with reference to a cartridge shown in Figures 1-3. This cartridge has five cartridge frame sections. Figure 3, reproduced below illustrates and refers to the five frame sections as holding frame 13, toner holding frame 16, developer frame 17, side cover 19 and side cover 20. No electrical connection is shown adjacent any joining surface.



Of relevance to the rejection Applicants emphasize that in all Sekine embodiments there is NO cutting of the cartridge along any of the joining surfaces of the original cartridge! Thus, for this reason alone, the claimed disassembled cartridges necessarily, expressly and inherently have different characteristics than the Sekine disassembled cartridges, and for this reason alone the rejection should be withdrawn.

All five of the Sekine disassembly methods include cutting the side covers 19 and 20 with an ultrasonic cutter, a circular saw or the like – but not along any joining surface between the cover sections and the other cartridge sections as shown above, but rather solely through the walls of the covers along predetermined cutting lines shown in Figure 8 of Sekine, a copy of which is reproduced in section “B” below. Also, the three main sections of the Sekine cartridge are not even disassembled! Rather the frame sections 13, 16 and 17 are kept intact, so that their original dimensional relationships, each to the other, remain the same.

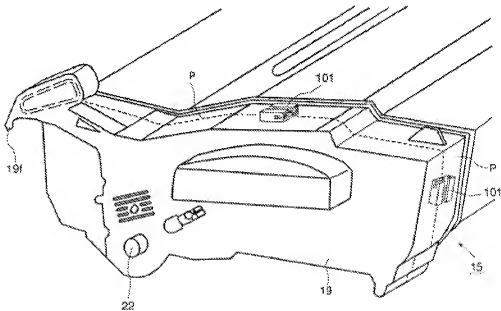
Also, Applicants notes that Sekine claims priority of invention back to a Japanese application filed on April 27, 2001, and that even in 2001 there was an acknowledged, a long-felt need that had not been met in the cartridge manufacturing and remanufacturing industry.

Specifically, in 2001 Sekine stated that “. . . it has long been desired to realize a simple method for remanufacturing a process cartridge so that a process cartridge which has lost its commercial value due to the depletion of the developer therein can be marketed again.” See, [1:57-61].

Because the presently claimed disassembled cartridge and process of disassembly are directed to remanufacturing a cartridge with the frame “as is”, the corresponding embodiments of Sekine will be discussed first.

**A. Sekine’s 3<sup>rd</sup> Embodiment Has Inherently Different Characteristics and Teaches Away From the Claimed Disassembled Cartridge**

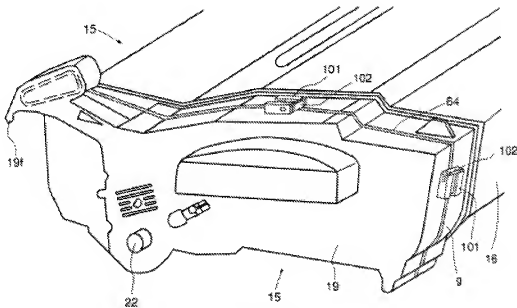
Sekine’s 3<sup>rd</sup> embodiment is discussed at [11:8-14:16] and illustrated in Figures 8-14. With reference to Figure 8, reproduced below, in this embodiment single-piece positioning members are fastened to the cover sections of the cartridge frame and the cover sections are the cut-off along a theoretical cutting line P and through the positioning members. The cutting is by “. . . an ultrasonic cutter, a circular saw, or the like.” No electrical conductor is shown adjacent any joining surface. The cutting is through the wall of the cover and not at the interface of where the cover joins the other sections.



**FIG. 8**



During reassembly, corresponding fastening members are attached to the positioning members to hold the separated sections of the frame are positioned precisely relative to the main section of the cartridge in all of the x, y and z directions. However, in this process "... part of the cover 19 (20) [the end sections of the cartridge frame] was eliminated by the cutting process during the disassembly." See, [13:65-66]. Thus, a gap "g" is left, as shown in Figure 15, reproduced below.



**FIG. 15**

As seen above, it is certain that that joining surfaces of the original container have been removed, a gap has been created and it is not possible that the disassembled cartridges could be remanufactured or reassembled along the joining surfaces of the original cartridges.

Thus, the Sekine 3<sup>rd</sup> embodiment disassembled has inherently different characteristics due to (i) it not including any joining surface of the original cartridge having been cut; (ii) it not including any joining surface of the original cartridge having been cut and suitable to be

sealingly joined along an interface of the original joining surfaces; (iii) no electrical conductor is adjacent any joining surface; and (iv) having its only cut surfaces be separated by a gap because all of the original material at the cut had been removed by the cutting process.

**B. Sekine's 4<sup>th</sup> Embodiment Has Inherently Different Characteristics and Teaches Away From the Claimed Disassembled Cartridge**

Sekine's 4<sup>th</sup> embodiment is similar to the 3<sup>rd</sup> embodiment, but uses two-piece positioning members rather than single-piece positioning members. As stated by Sekine, the 4<sup>th</sup> embodiment is identical to the 3<sup>rd</sup> embodiment except that during the cutting operation there is no cutting of the connective portion of the positioning members and thus is simpler. Thus, the 4<sup>th</sup> Sekine embodiment also has disassembled cartridges that suffer the same problems as in the 3<sup>rd</sup> Sekine embodiment and, lacking cut joining surfaces that can be rejoined, have inherently different characteristics than claimed disassembled cartridges. Applicants incorporate by reference the reply made above in regard to the 3<sup>rd</sup> Sekine embodiment.

**C. Sekine's 5<sup>th</sup> Embodiment Has Inherently Different Characteristics and Teaches Away From the Claimed Disassembled Cartridge**

Sekine's 5<sup>th</sup> embodiment, described at [14:52-16:25] and illustrated in Figures 18-20, use additional components to enable disassembly and then reassembly of the frame. While the goal of Sekine's 5<sup>th</sup> embodiment is that the separated section of the frame can be reattached to the main section of the frame in precise alignment as before the cutting, and "... making it possible to remanufacture a cartridge at the same level of accuracy as that at which it was manufactured," the disassembled Sekine cartridges are entirely different from the claimed disassembled cartridges. See, e.g., [16:11-24]. Referring to Figure 18, reproduced below, the original cartridge 104 includes a section 106 and a joint or connective portion 107 that attaches a cover 105.

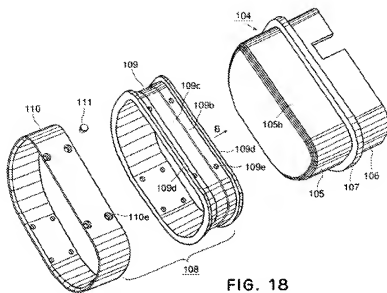


FIG. 18

A positioning member 109 is fitted around the cover 105 and the cover 105 and member 109 are then cut with an ultrasonic welder, a circular saw or the like. Then the fastening member 110, with the previously removed cover 105, is fit over the remaining part of the positioning member 109 and fastened to the main section of the cartridge "... precisely in alignment with the main section in all of the x, y, and z directions. Thus, the Sekine disassembled cartridges have substantial structures that are in addition to the original cartridges, they do not have cut joining surfaces that enable the remanufacture or re assembly of the cartridges back to OEM specifications as do the claimed disassembled cartridges, and thus have inherently different characteristics.

Furthermore, the reasons state above in regard to the Sekine cartridge not having been cut along any of the original cartridge joining surfaces, and the inherently different characteristics in the disassembled cartridges that result apply as well to the 5<sup>th</sup> Sekine embodiment and are incorporated by reference herein.

**D. Sekine's 1<sup>st</sup> and 2<sup>nd</sup> Embodiments Have Inherently Different Characteristics and Teach Away From the Claimed Disassembled Cartridge**

Sekine's 1<sup>st</sup> and 2<sup>nd</sup> embodiments also cut the end sections off of the cartridge, but for a process in which the cartridge frames are not used "as is" in remanufacturing. Rather the cartridge frames are pulverized and used a plastic material in remanufacturing. Thus, there is no disclosure of any cutting along joining surfaces of the original cartridge, and no disclosure of any cutting by a computer-implemented laser. See, e.g., [10:55-56], where Sekine states: "As for the cutting tools, an ultrasonic cutter, a circular saw, or the like, can be used." In the first embodiment, described at [3:33-10:7] and illustrated in Figures 1-5, the side covers 19 and 20 are cut through theoretical cutting lines 64, as shown in Figure 4. No cutting line is through any joining surface of the original container. A copy of Figure 4 is reproduced below for convenience.

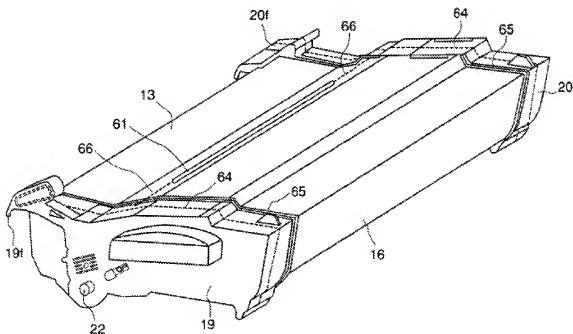


FIG. 4

As seen from the above illustration, the cutting line 64 is through the center part of the laterally extending walls of the covers 19 and 20, rather than at the joining surfaces of the covers 19 and 20 to the main sections of the cartridge frame 13, 16 and 17 (See Figure 4 above for the locations of the joining surfaces).

Also, the resulting disassembled cartridge is not “suitable to be remanufactured or reassembled” because it fails to have “sections with thermoplastic joining surfaces adapted to be sealingly joined along an interface between said joining surfaces . . . and . . . to achieve alignment and orientation necessary for proper operation” as claimed in claims 7-11 and 14. In the 1<sup>st</sup> Sekine embodiment, there is no such surface because in this embodiment the frame sections are not remanufactured “as is”. Rather they are pulverized and then reused only as plastic material. Thus, the Sekine 1<sup>st</sup> embodiment teaches away from the presently claimed invention, and, in regard to the joining surfaces, admits that its disassembled cartridges have inherently different characteristics than the claimed disassembled cartridges. Here Sekine teaches disassembled end sections of a cartridge with the cut in the middle of the section wall, no concern for the surfaces of the cuts and pulverized cut cartridge sections to be used as a plastic material; but the claimed disassembled cartridges have joining surfaces that are at the same location as the original cartridge joining surfaces, that can be sealingly joined to be remanufactured or reassembled “as is” to achieve alignment and orientation necessary for proper operation.

#### **IX. REPLY TO REJECTION OF CLAIM 6 MADE UNDER 35 USC §103(a)**

Claims 6 and 15-18 have been rejected under 35 USC §103(a) as being unpatentable over US Patent No. 6,223,010 to Araki (hereinafter referred to as “the ‘010 patent” or “Araki”) in view of US Patent No. 6,609,044 to Basista et al (hereinafter referred to as “the ‘044 patent” or “Basista”) and US Patent No. 6,464,327 to Eckard et al (hereinafter referred to as “the ‘327 patent” or “Eckard”). In reply Applicants will show that the claimed invention is not prima facie obvious from the cited references, and that, to the contrary, these references teach away from the invention as presently claimed.

**A. Araki Teaches Away From the Claimed Invention**

Araki teaches away from the presently claimed process. As expressly stated in Araki, in all embodiments of his process the cartridge components themselves are “melted and recycled as a resin material”. See, Araki at 9:17-25<sup>1</sup>. Araki describes several embodiments, with each embodiment differing in the identity of the particular recyclable part(s) that are “easily taken out [of the disassembled cartridge] without being damaged” and differing in the specific technique for cutting the cartridge with a laser so that each such part can easily be removed. In Araki the ground-up cartridge material is used to make entirely new products, and likely for this reason there is no requirement in Araki regarding details of the cut, such as precision, specific depth and so forth, except that Araki avoids cutting the specific components that are to be recycled, *per se*. The nature of the cuts made in the Araki process renders re-assembly of the cartridges to be impossible. See, Shanun Decl., at ¶¶ 23-24. Thus, in Araki the focus is on reusing certain components contained in the cartridge; not on reusing the cartridge itself, and this focus necessarily means that the Araki process is directly contrary to the presently claimed process.

In Araki, the general approach to cutting the cartridge with a laser beam is to dispose between the laser beam and each pre-designated part that is, *per se*, to be recycled a “material layer difficult to cut by the laser”. See, Araki Abstract, second sentence. The specific, easily removable and recycled parts are identified in the paragraph spanning columns 1-2 of Araki. In no Araki embodiment is the toner frame or hopper frame, *per se*, remanufactured, and thus his disassembly process ignores and fails to include many of the limitations of the presently claimed process. Thus, in the Araki process there is no incentive and no reason for precise cutting the cartridge along the joining surfaces of the original cartridge. However, such precise cutting is a major objective and is an important feature of the presently claimed process.

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<sup>1</sup> While the present application refers to the two constituent parts, or components of a toner cartridge as the “toner section” and the “hopper section”, Araki refers to these parts as the toner frame 12a and the cleaning frame 12b. See, Araki at 9:21-25. Also, Araki refers to a toner cartridge as a “process cartridge”.

With respect to presently amended independent claim 6, Araki has no disclosure and no teaching of at least the following claim elements and limitations:

- Determining the thickness of each interface line segment;
- Removably retaining the toner cartridge in a gimbal;
- Providing a moveably adjustable light path;
- Controlling the laser, the gimbal and the light path by a computer program; and,
- Causing the laser beam to trace a path along each line segment at a speed determined by correlating the thickness of each interface line segment with the laser beam power.

**B. Basista Teaches Away From the Claimed Invention**

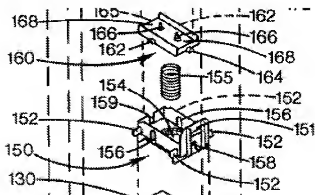
The secondary reference cited and relied on in the Office Action, Basista '044 teaches away from the presently claimed invention. Basista is not intended to cut cartridges. It is purely for two-dimensional cutting of material, and is primarily related to the methodology and software for cutting shapes out of a sheet to optimize the speed of cutting sheets. See, Shanun Decl., at ¶ 25. Not only does Basista not have any disclosure of the above bullet-pointed claim elements, it is directed and limited to cutting a single sheet of material. See, Basista Abstract, lines 1-3; and [1:10-15; 3: 5-10]. Thus, Basista is not even relevant to laser cutting of thermoplastic material, cutting a plurality of interface line segments and is not relevant to any part of the toner cartridge repair or remanufacturing industry. There is no disclosure of determining the speed of a laser beam by correlating the thickness of each interface line segment of a thermoplastic material with the laser beam power. Thus, no matter how broadly claim 6 is interpreted, there is no reasonable basis to conclude that using Basista's computer cutting program for a sheet of metal could be a credible teaching, much less a reasonable teaching for modifying the Araki system and methods to yield the presently claimed inventions.

### C. Eckard Teaches Away From the Claimed Invention

The third reference cited and relied on in the Office Action, Eckard '327 also teaches away from the claimed invention. Eckard is an inkjet plotter for printing conventional engineering and architectural drawings and poster-sized images. Eckard is limited to a replaceable inkjet printhead cleaner service station system including a snout wiper for cleaning ink residue from a non-ink ejecting snout portion of an inkjet printhead cartridge.

The Office Action alleges that the “gimbal action rotates the product for processing” and that it would have been obvious to use a rotation device, as taught by Eckard in the Araki system. However, the Office Action fails to identify any specific “rotation device” in Eckard, and fails to acknowledge that the “product” in Eckard is a different product than in Araki. Moreover, while the product in the present invention is a toner cartridge that is disassembled along its joining surfaces in a way that permits it to be reassembled back to original equipment specifications. However, no such product is found in Eckard. Rather Eckard is directed to inkjet cartridges, and cleaning of the cartridges. It does not concern disassembly of any cartridge, let alone a toner cartridge.

It appears that the Office Action refers to the cleaning unit 100 shown in Figure 3 as having a “gimbal”, because that is the only structure which is described with use of the word “gimbal”. See [9:20]. However the Figure 3 “gimbal” structure has no relation to the claimed gimbal structure, and it is inconceivable how that structure or any teaching related to that structure could be used in Araki. For convenience, Figure 3, in pertinent part is reproduced below:





According to Eckard the posts 162, 164 and 165 in conjunction with slots 156, 158 and 159 and the spring 155 allow the cap retainer to be gimbal-mounted to the cap sled 150, allowing the retainer 160 to move in the Z axis direction, while also being able to tilt between the X and Y axes, which aids in sealing the printhead. See, [9:12-30]. But aiding in sealing printheads in an operating printer has nothing to do with disassembly of a toner cartridge. And, with it appearing that the Eckard cap retainer (the work piece) is intended to correspond to the cartridge (the work piece) in the claimed invention, the actual teaching of Eckard is contrary to the claimed invention. This is because the gimbal structure in Eckard has spring 155 that permits movement in the X and Y directions, but in order for the claimed invention to work for its intended purpose there can be no such movement. To yield a disassembled cartridge with the precision, computer-implemented cutting needed to yield joining surfaces that can be reassembled to OEM specs there can be no such movement. In the language of the claims, e.g., claim 6, a process that used Eckard type gimbal could not possibly cause a “laser beam to trace a path long each said line segment of the interface between said joining surfaces” because the spring would cause some movement of those line segments!

Thus, for all of the above reasons, Eckard’s teachings are not relevant to the issue of obviousness of claims 6 and 15-18, and the rejection should be withdrawn.

**D. The Alleged Reason for Combining the Alleged Teaching of the Cited References Do Not Make Practical Sense and Are Contrary to the Reasonable Implications Flowing From Those References; and the Claimed Inventions are Unexpected and Surprising**

The Office Action alleges that using the computer and cutting program of Basista in the Araki system would have been obvious to ensure cutting accuracy and decrease processing time, and that it would have been obvious to use a rotation device as taught by Piccioli in the Araki system because of enhanced product handling during the disassembly process.

In reply Applicants would point out even if the Basista computer and cutting program were used in the Araki system, and even if cutting accuracy were improved and processing time

in the Araki system were reduced, it still would not have yielded the claimed process. For example, Basista is concerned with optimizing the amount of time to perform required cuts in a piece of sheet metal in order to cut out a series of individual parts or shapes from the sheet in the most efficient way. In the present invention the starting material is not a sheet but rather is a finished, 3-dimensional product that presents only a single serpentine path for cutting. The concept of optimizing a path of cutting simply does not exist in regard to the present invention.

Also, assuming, *arguendo*, that the Basista cutting program suggested, as a matter of cutting efficiency, to cut a cartridge along a path that was not along the joining surfaces, that would be directly contrary to the stated purpose and express language of claim 6. It simply would make no sense to efficiently cut a path through the cartridge and end up with cartridge sections that could not then be used for the intended purpose of re-joining them along the original joining surfaces in order to repair or remanufacture a toner cartridge that meets OEM specifications.

Similarly, assuming *arguendo* that a rotation device (gimbal) as taught by Eckard was used in the Araki system, it is not true that “enhanced ease of product handling” would result. Rather, the produce would bounce around during the process because the spring used by Eckard in the “rotation device” called a “gimbal”, and furthermore, such use would not yield the claimed process. Simply put the Eckard “rotation device” is not a gimbal, does not operate like a gimbal and would be of no use in the Araki system to yield toner cartridge sections that could thereafter be re-joined to make cartridges meeting OEM specifications. As expressly required by claim 6 the computer processor causes the laser beam to trace a path along each line segment by movably adjusting the light path and the gimbal. In other words, the computer controls the light path and the cartridge movement. But in Eckard there is no control – the product bounces around by operation of the spring. Thus, use of Eckard contrary to the invention of claims 6 and 15-18.

In addition to all of the above, the presently claimed processes follow a long felt need and failure of others to yield a surprising and unexpected result – a product that can be used to remanufacture toner cartridges to OEM specifications in a safe and economical fashion. The

Shanun Decl. and the Declaration of Joy James (“James Decl.”) further show that the claimed inventions are non-obvious. See, e.g., the Shanun Decl., at ¶¶ 27-28, and the Joy Decl., at ¶¶ 7-9. Both of these declarations explain the state of the art and provide opinions and testimony regarding the presently claimed inventions. For example, it is the process described in United States Patent 6,754,460 (“the ‘460 patent”) to Lewis et al, that provides a good benchmark for the type and sophistication of the equipment used in the remanufacturing industry for disassembling toner cartridges. As shown in Lewis ‘460 and further explained in the Shanun Decl., Lewis is limited to use of a contact cutting tool that creates a much wider gap, uses up more cartridge material and results in a cut that is less attractive than the cut created by the presently claimed laser cutting process. Furthermore, the Lewis process is slower, has dust, debris and injury risks that are not found with the presently claimed laser cutting process.

For all of the above reasons the teachings of the individual cited references do not combine to render the claimed process obvious, and the rejection to claims 6 and 15-18 should be withdrawn.

#### **X. AUTHORIZATION TO CHARGE FEES**

If any fees are due in regard to the present reply, authorization is hereby granted to charge Deposit Account 50-3725.

#### **XI. CONCLUSION**

For all of the above reasons it is requested that the rejections be withdrawn and that a Notice of Allowance of all pending claims be forthcoming.

Respectfully submitted,

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